



**FISCAL
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Fiscal Policies for Climate Change Adaptation

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Outline

- Why is adaptation needed and why is it macro-critical?
- Policies for adaptation
- Mainstreaming adaptation in fiscal policy

Why is adaptation needed and why is it macro-critical?

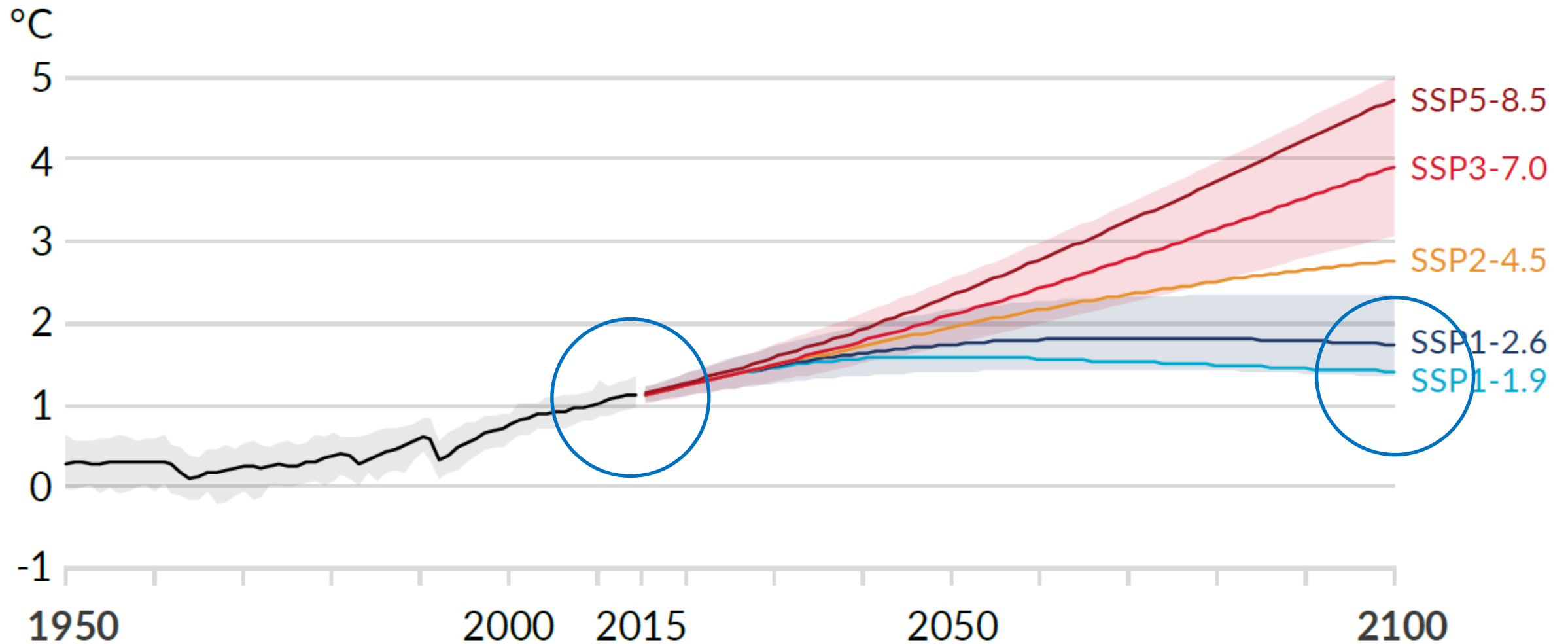
Adaptation to climate is needed and is macro-critical

- Adaptation to climate change is needed:
 - Climate is changing and will continue to change even with intensive mitigation efforts
 - Adaptation can help reduce climate damages

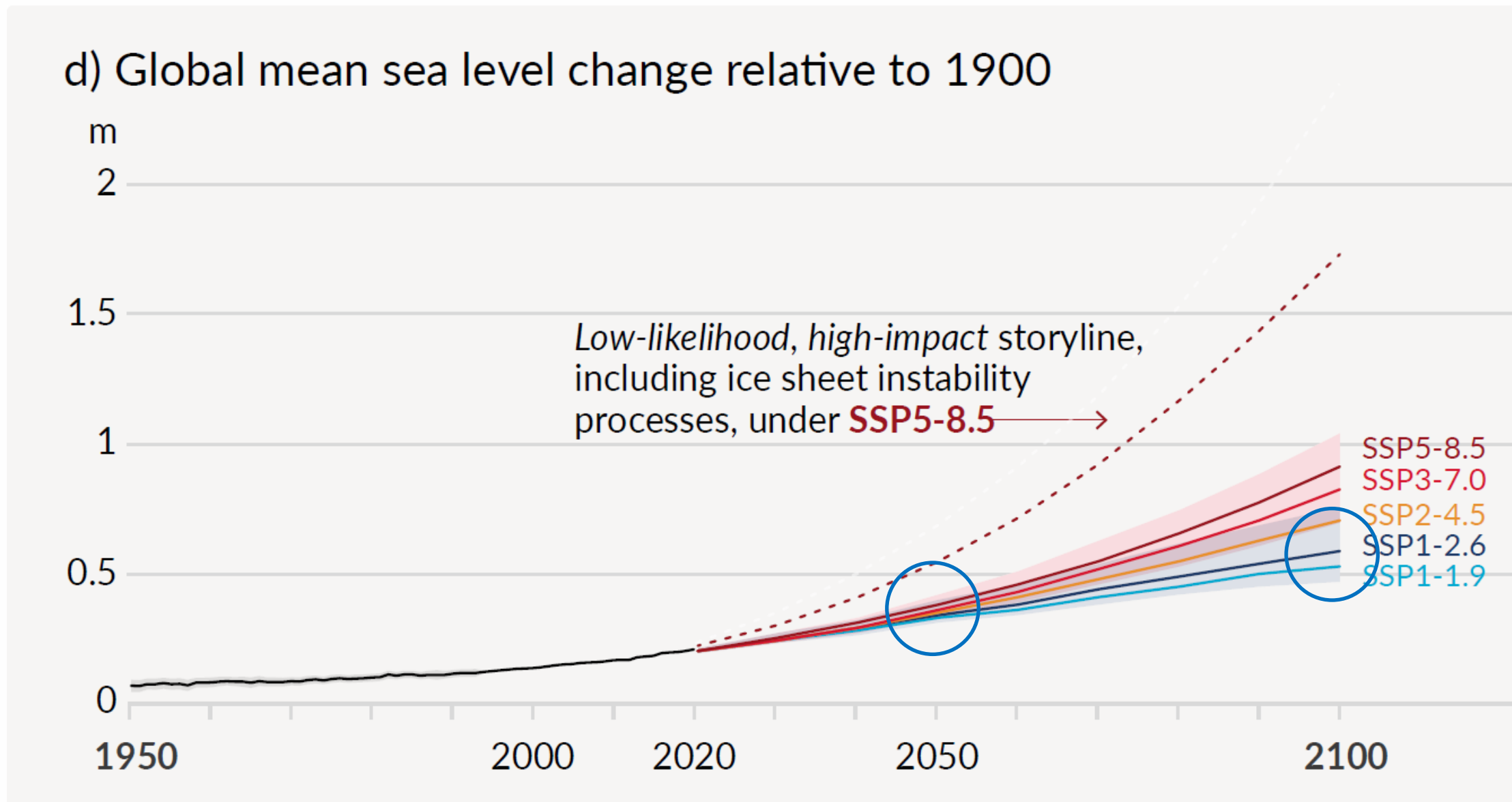
- Adaptation is macro-critical:
 - Large uncertainty about future climate at local levels and socio-economic development
 - Without adaptation the macro-economic impact of climate change can be large
 - Investment needs in adaptation are very large in vulnerable developing countries

- Adaptation can only in part compensate for slow progress on mitigation, but it cannot substitute for deep emission cuts
 - Scientific consensus: GHG emissions are the main cause of global warming

a) Global surface temperature change relative to 1850-1900



Source: Figure SPM.8 in IPCC (2021)

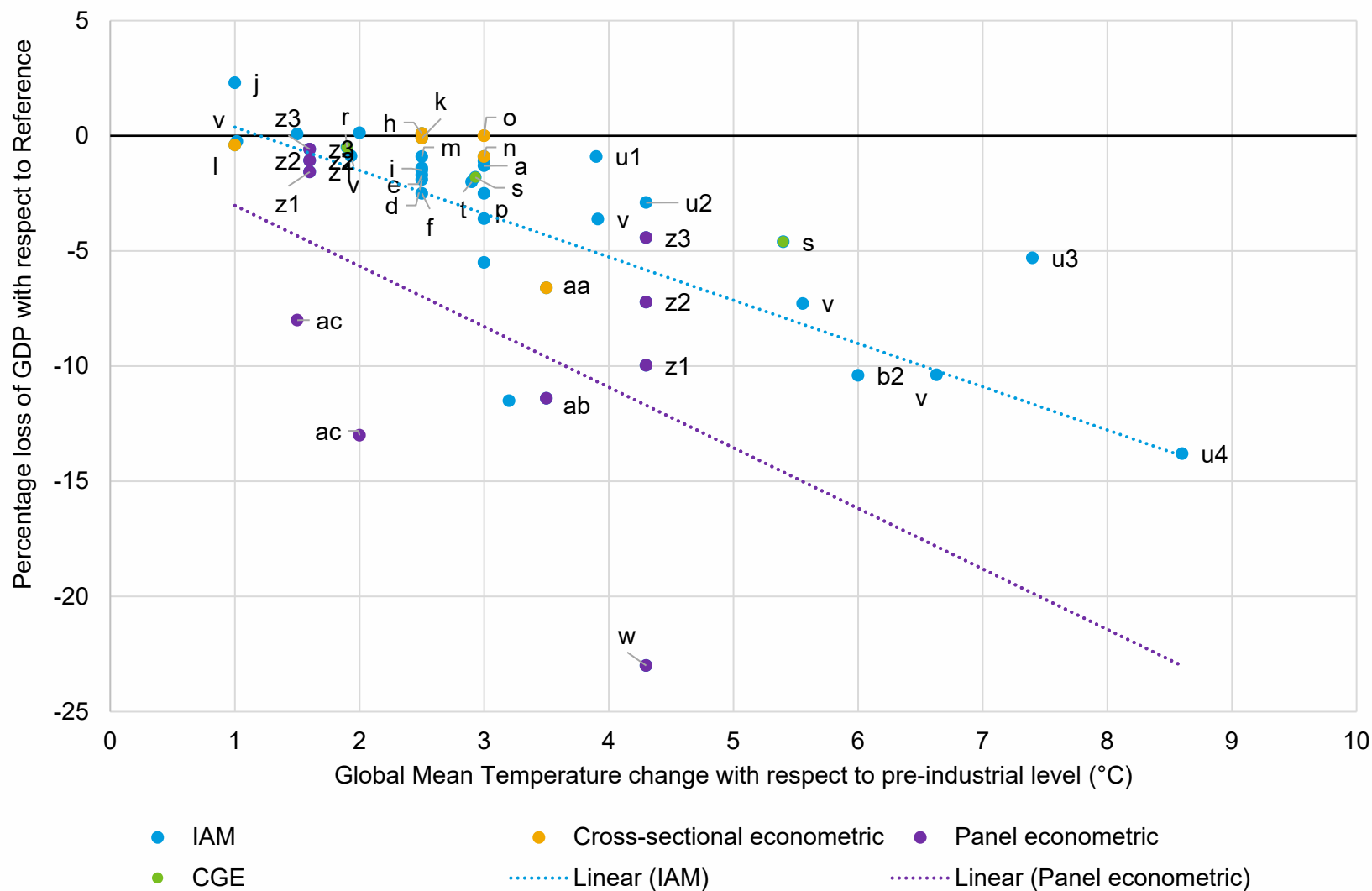


Source: Figure SPM.8 in IPCC (2021)

Benefit of adaptation

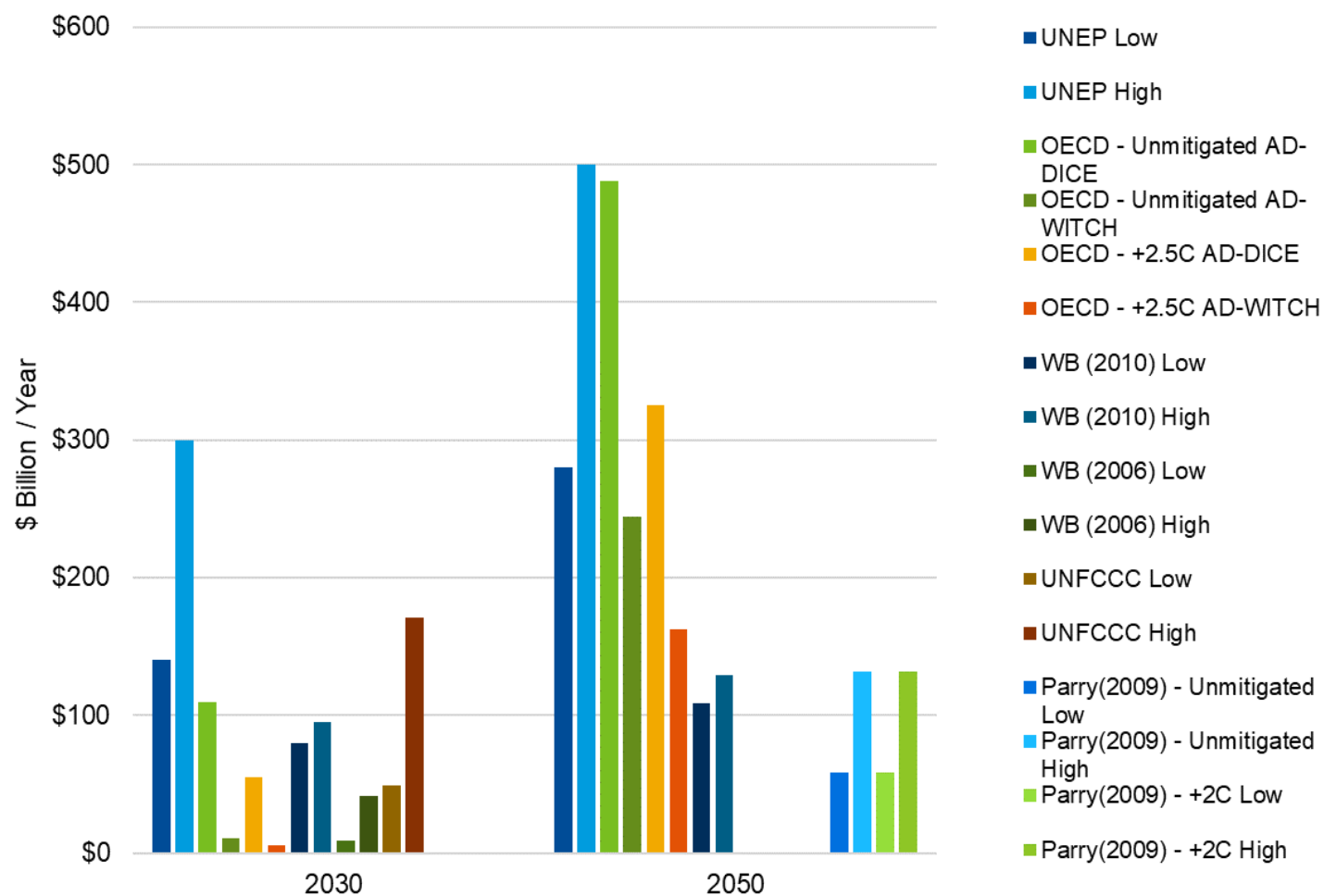
- The benefit of adaptation is the avoided damage from climate
- Global studies reveal that 50% up to 80% of damages can be avoided with adaptation
 - Different climate cost estimates (adaptation + residual costs) partly due to different adaptation assumption
 - E.g., Integrated Assessment Models have returns as large as 500 to 1,000 percent
- Sectoral and case studies confirm that the potential returns to adaptation are large
- Reaping the full benefits of adaptation projects will take time and capacity building

Effectiveness of adaptation



Source: Massetti (2021) starting from surveys in Tol (2009, 2014).

Global investment needs in adaptation

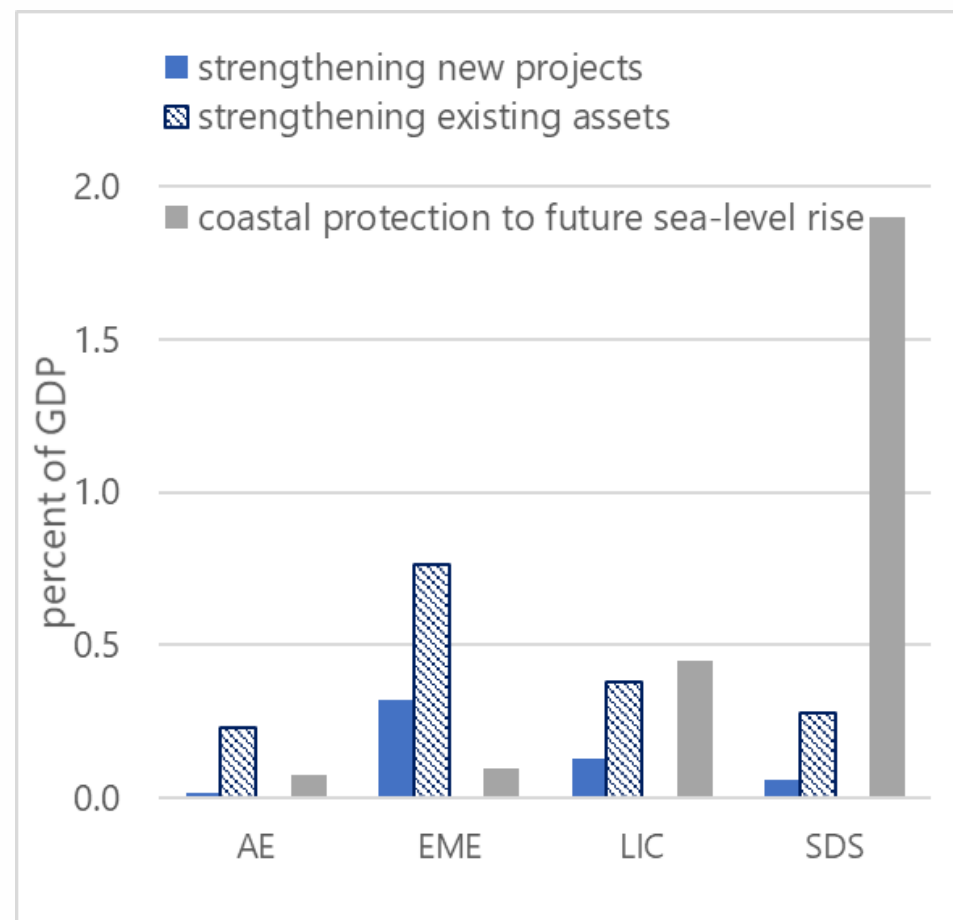


Source: Massetti (2021).

Country costs of adaptation public policies

- Rare systematic cross-country approaches
- Address *current* floods and storms:
 - beneficial strengthening of public assets costs ~0.5% of GDP per year globally;
- Address *future* sea-level rise:
 - Annual coastal protection costs of 0.1% of GDP
- Large disparities between and within groups

Adaptation average annual costs (2020-25)



Source: Nicholls et al. 2019, Rozenberg et al. 2019, Hallegatte et al. 2019, IMF Capital Stock 2019 Dataset, IMF WEO and Staff calculations.

Can adaptation replace mitigation?

- No!
- Adaptation greatly reduces the cost of climate change, but strong mitigation action is needed to stabilize global temperature
- Both adaptation and mitigation are necessary
- Trade-offs (e.g., increased energy use for air conditioning) and synergies (e.g., afforestation to prevent floods and carbon sequestration) should be carefully assessed

Policies for adaptation

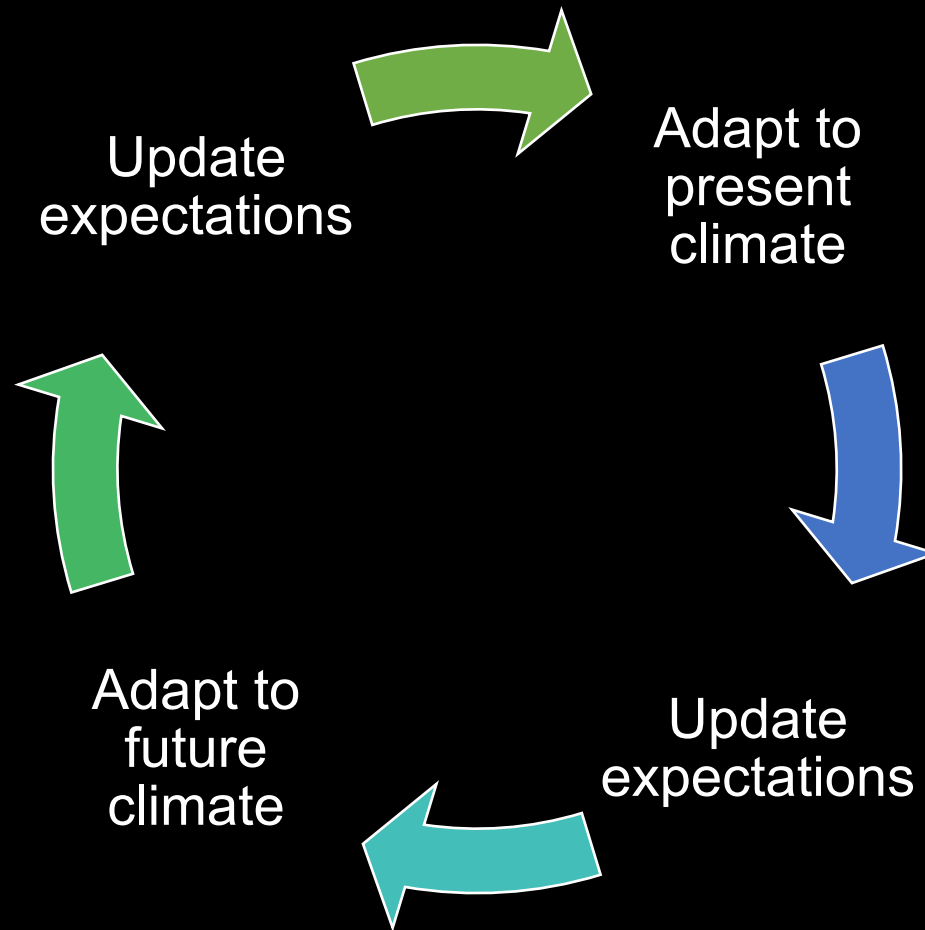
Characterizing climate change adaptation

“In human systems, [adaptation is] the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. “ (IPCC, 2018)

Framing adaptation policies

- Adaptation to present climate and future climate
- Climate adaptation is a *process*
- Adaptation to climate change is about updating expectations about climate
- Technological diffusion, technological innovation and behavioral change
- Major complications for irreversible, long-term investments:
 - Uncertainty about future climate
 - Intergenerational equity issues

Adaptation as a *process*



Selecting adaptation policies

- Cost-benefit analysis should cover adaptation projects like any other project
 - CBA includes non-market impacts (lives saved, environmental benefits,)
 - Only projects with a positive net present value should be financed
 - Because of budget constraints, projects should be ranked based on their benefit-cost ratio
- Estimate distributional impacts and address equity concerns
 - Some people may lose from adaptation (or the lack thereof)
 - Balance efficiency and equity when selecting projects; consider re-distribution tools
- If governments apply the same criteria across all other investments, adaptation becomes integral part of efficient development

When is government intervention warranted?

➤ Adaptations that have large positive externalities

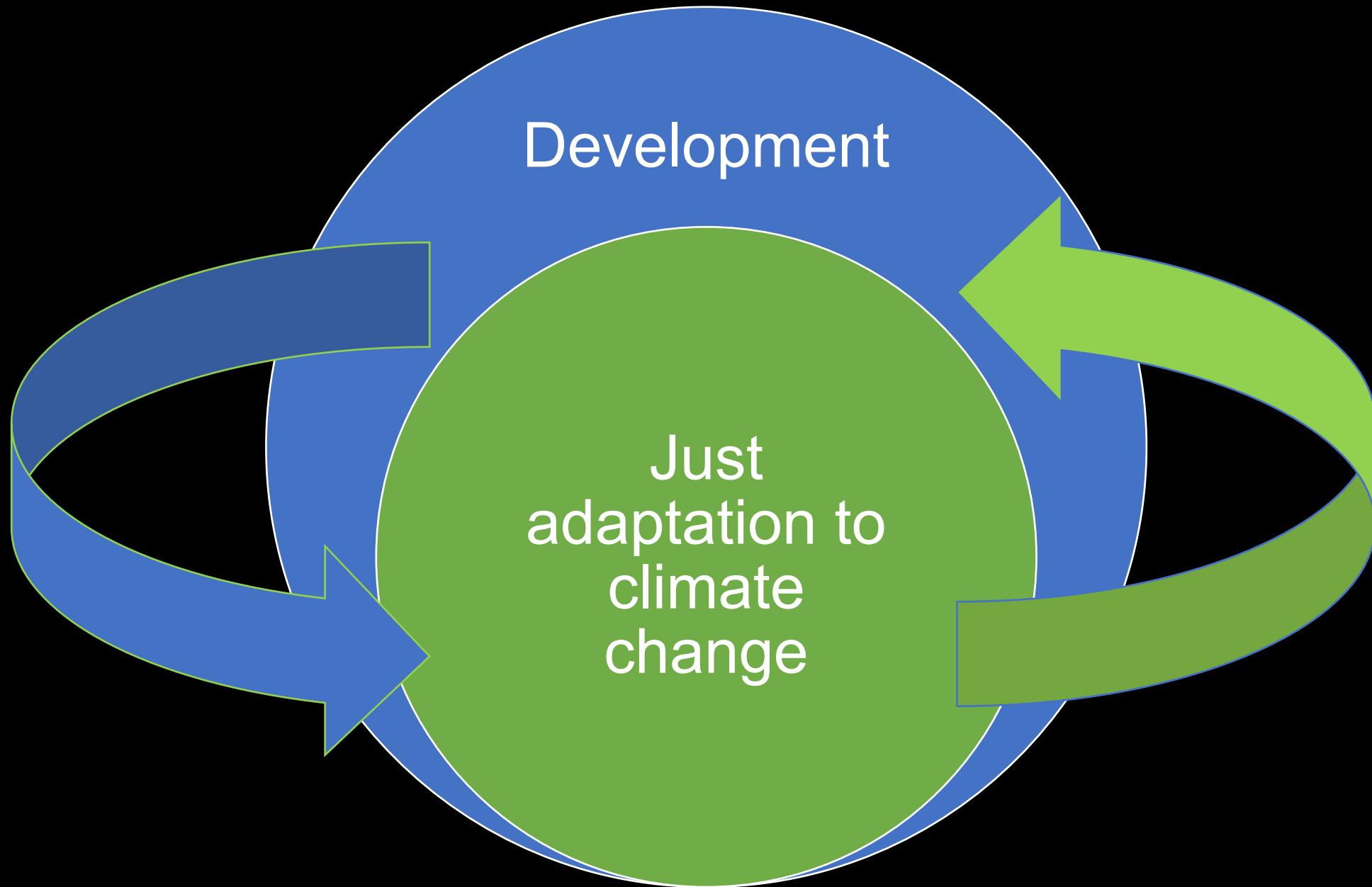
- Information about climate change
- Research and development
- Network adaptations
- Infrastructure

➤ Removing barriers to efficient private adaptation

- Imperfections in credit markets
- Barriers to trade
- Inefficiencies in insurance markets and in risk pricing

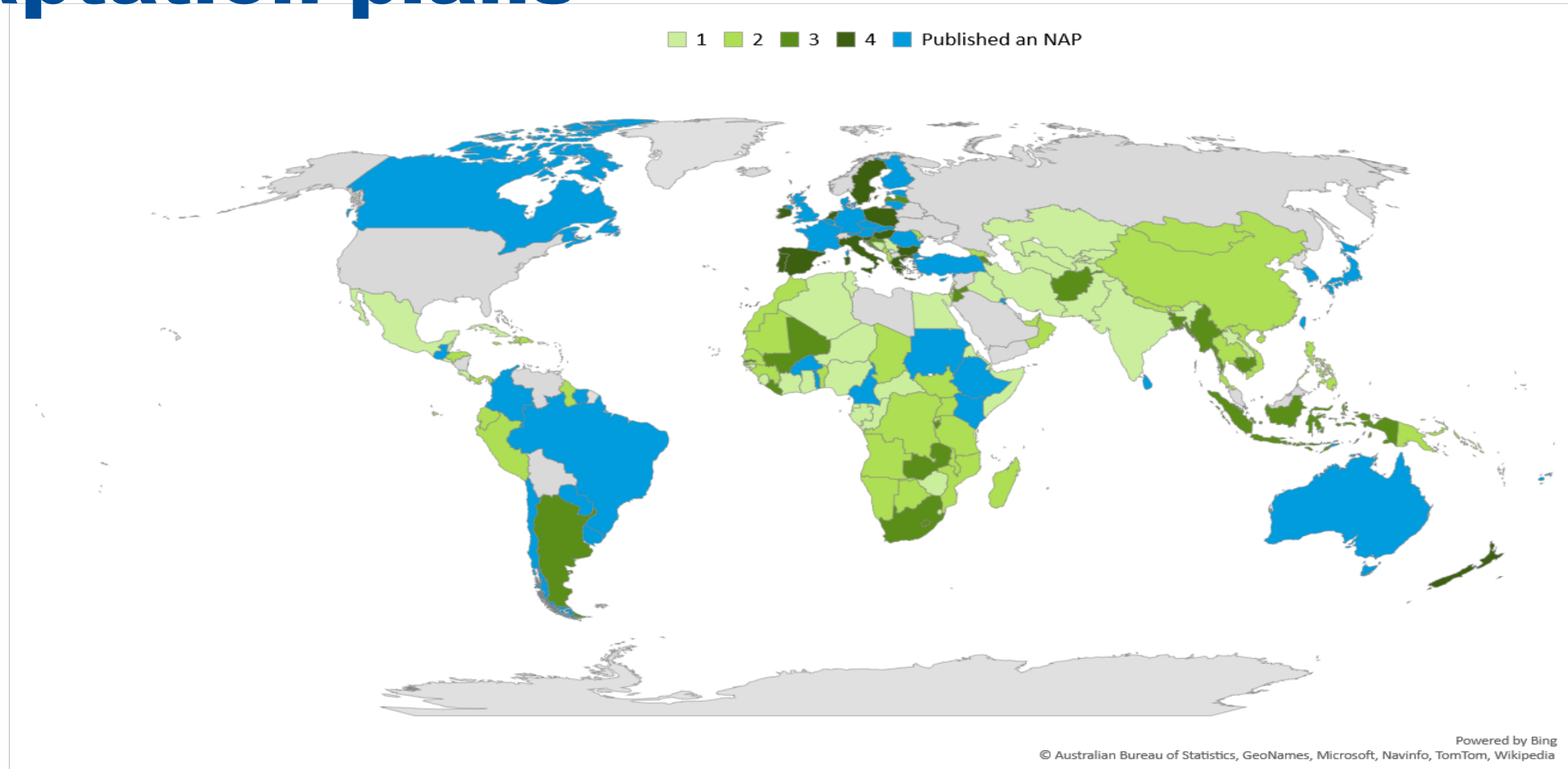
➤ Redistribution

- To address equity issues within countries and across countries



Mainstreaming Adaptation in Fiscal Policy

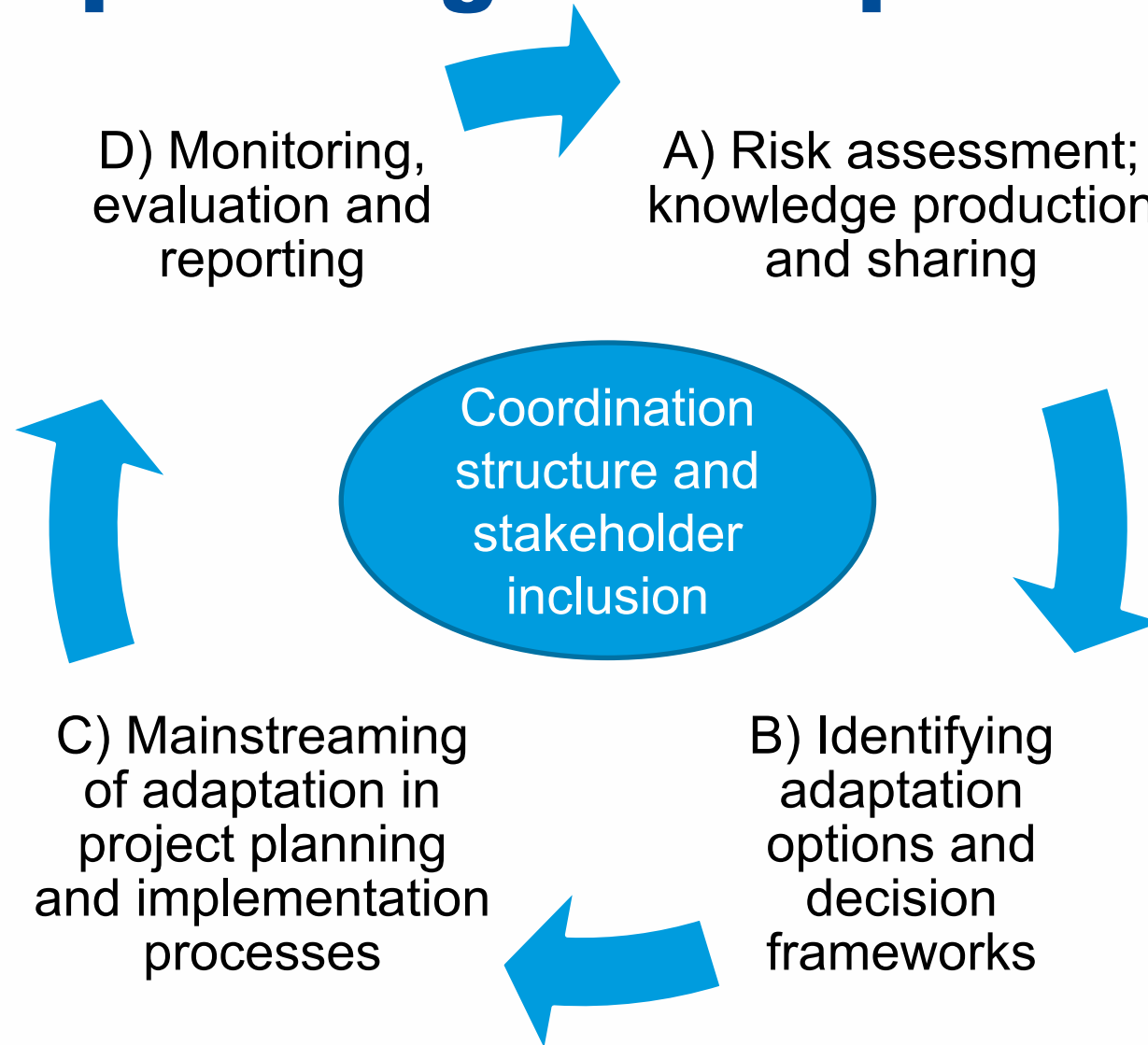
Adaptation plans



Note: Progress towards the publication of a full-fledge NAP is assessed according to UNFCCC guidelines. The guidelines are articulated around four main steps which are themselves divided further in a total of 23 measures. A country is considered to have taken a step if any of the detailed measures underpinning this step has been completed (Annex 3). Grey areas denote countries for which the information collected was not sufficient to reach a conclusion.

Source: UNFCCC, EUC, and Staff assessment.

Adaptation planning and implementation



Identifying, selecting adaptation options: a 3-pillar approach

Ex-ante policies to reduce risks and their impact

- adaptation infrastructure
- new technologies
- public information
- policies discouraging risk-taking

Ex-post response to risks

- social safety nets
- disaster contingency plans

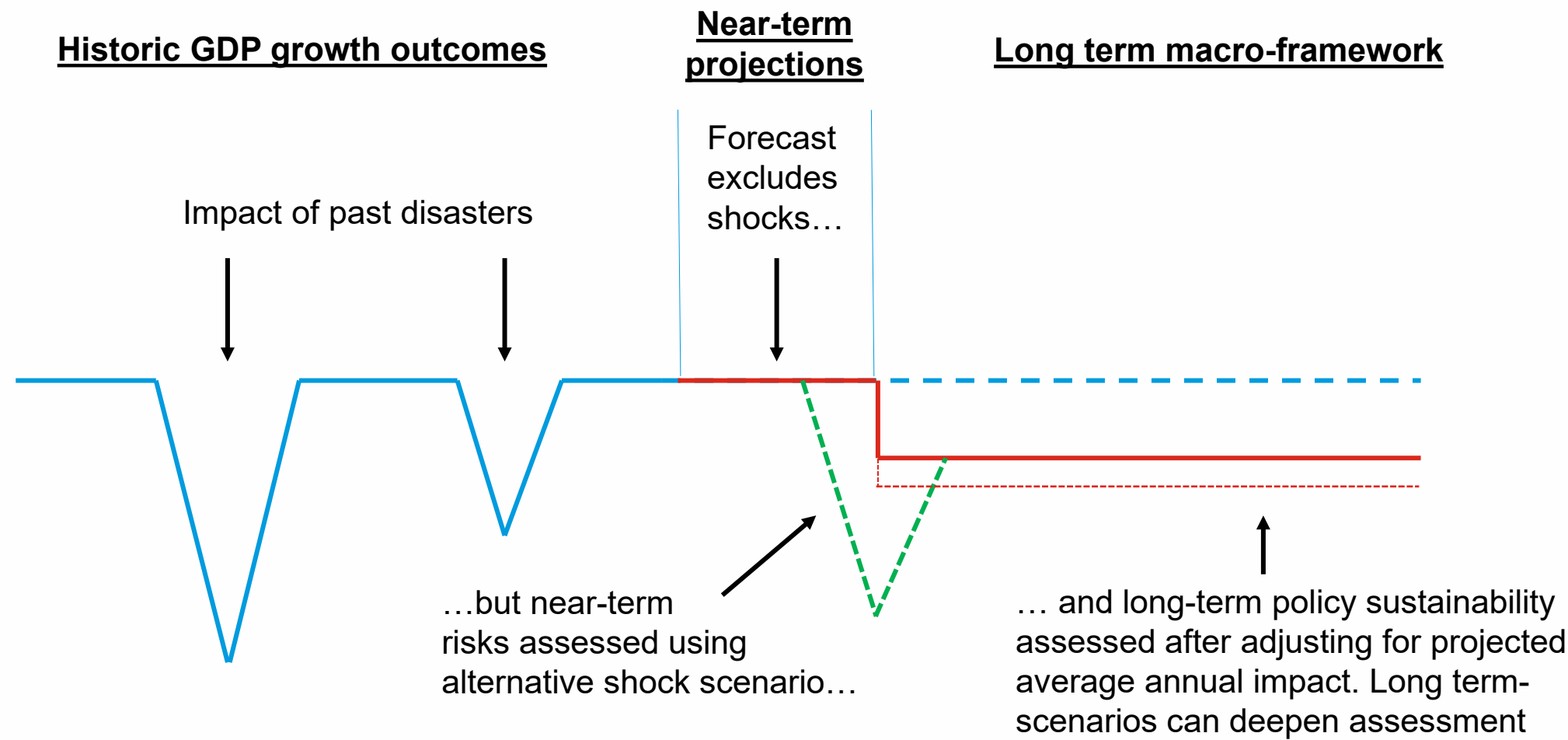
Resilient financing sourcing

- risk-layering approach
- long-term sustainability

Mainstreaming adaptation in PFM

- Gradual adjustments of existing processes and tools preferable
- Well-integrated planning and budgeting functions
 - Plan adaptation goals and budget implementation policies in fiscal envelope
- Assess fiscal risks adequately and include climate risks
- Integrate climate considerations in PIM institutions and processes
 - Project design could be adapted to deal with deep uncertainty
 - Address major PIM weaknesses before significant adaptation investment scale-up

Integrating climate risks in macro-framework with scenarios



Source: Based on IMF 2016.

Conclusion

Conclusion

- Adaptation to climate change is needed and macro-critical
- Adaptation to climate change is a process that requires optimally re-adjusting investment and consumption under new expectations about climate
- Cost-benefit analysis of adaptation projects can be useful to prioritize interventions at national level
- A just adaptation would address the inequitable effect of climate change
- Adaptation requires comprehensive integration in fiscal policy-making

Thank you!